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Peregrine Clarifies Its Anti-Angiogenesis VEGF Antibody and Vascular Targeting Agents Compared to Other VEGF Antibodies

TUSTIN, Calif., May 20 /PRNewswire-FirstCall/ -- Peregrine Pharmaceuticals (Nasdaq: PPHM) provided its investors today with clarification of its VEGF anti-angiogenesis antibody 2C3 compared to Genentech's Avastin and other VEGF compounds. Although they are similar, there are several important distinctions between 2C3 and other VEGF antibodies under development.

2C3 is an antibody that blocks the interaction of Vascular Endothelial Growth Factor (VEGF) with one of its key receptors. VEGF is a primary stimulant of tumor angiogenesis. Peregrine's researchers have developed a monoclonal antibody (2C3) that blocks VEGF from binding to VEGF receptor 2 (KDR/Flk-1) but not VEGF receptor 1 (FLT-1/flt-1). Avastin and other VEGF antibodies block both VEGF receptors.

Inhibiting VEGF receptor 2, but not VEGF receptor 1, is a key difference in the anti-tumor activity of 2C3. VEGF receptor 2 has been shown to be the main receptor that cancer cells use to grow new vessels, whereas VEGF receptor 1 is utilized for normal cellular function of macrophages and monocytes. An inhibitor of VEGF that selectively blocks the function of VEGF receptor 2 should not interfere with macrophage infiltration into tumors, which is an important part of the body's defenses against cancer. This is potentially a significant difference of 2C3 over other VEGF inhibitors that block VEGF binding to both receptors and may provide a better safety profile.

In a recent publication in Angiogenesis, treatment in a metastatic breast cancer model, 2C3 inhibited by 75% the establishment of tumor colonies and reduced tumor burden in the lungs of mice injected intravenously with human breast cancer cells. Of particular interest, 2C3 also inhibited the expression of VEGF receptor 2. This dual effect further inhibits the ability of cancer cells to use VEGF to grow tumor vessels. No toxicity was observed in any of these studies.

Peregrine president and CEO Steven King said, "Our 2C3 antibody has several potentially important differences than other VEGF antibodies under development. The ability to block a main receptor that cancer cells use to grow new blood vessels while at the same time not inhibiting a receptor that is used by the body to naturally fight cancer is potentially a very important development and may improve the safety profile of this compound compared to other VEGF antibodies. We are currently developing a fully human antibody for this technology that can be evaluated for use in human clinical studies."

Anti-angiogenesis Agents

Every cancer begins its existence as a tiny cluster of abnormal tumor cells growing in an organ. Without its own blood supply to bring in oxygen and nutrients, the tumor cannot grow larger than 1-2 millimeters in diameter (about the size of a small pea). While this early stage of tumor growth can last for month or even years, eventually a few cancer cells gain the ability to produce proteins known as angiogenic growth factors. These "growth factors" are released by the tumor into nearby tissues, and they stimulate new blood vessels to sprout vigorously from existing healthy blood vessels, into the tumor.

Anti-angiogenic therapy is a new form of cancer treatment using drugs called "angiogenesis inhibitors" that specifically halt new blood vessel growth, stabilize the patient and in some cases shrink tumors. Anti- angiogenesis agents work by blocking growth factors that are responsible for tumor growth. One difficulty facing this new class of drugs is that there are many different growth factors that are responsible for tumor angiogenesis. Developing drugs which block all of the growth factors simultaneously has been elusive.

About Vascular Target Agents - The Next Generation of Cancer Therapy

Vascular Targeting Agents are designed to go one step further than anti- angiogenesis agents by completely destroying the existing blood network of the tumor versus stopping the growth of new tumor blood vessels. In pre-clinical animal studies, VTAs have shown to be potent anti-cancer agents that act by cutting off the supply of oxygen and nutrients to tumor cells by causing blood clots to form within the tumor's blood supply network. VTAs localize within the tumor vasculature by selectively binding to the flat endothelial cells that line tumor blood vessels. Once the VTA binds to its target, it initiates thrombosis (blood clotting) through a coagulation cascade, which leads to complete clotting of the tumor blood vessels within a matter of minutes. Because blockage of a single capillary results in the destruction of thousands of tumor cells, only a small quantity of VTAs localized in the tumor's vascular system may cause an avalanche of tumor cell death.

VTAs offer several advantages as potentially powerful anti-cancer treatments. By targeting receptors unique to tumor cell vasculature, VTAs can kill tumors by cutting off oxygen and nutrients without causing damage to surrounding healthy tissue. Additionally, VTAs reduce the risk of potential side effects by operating at lower dosages than traditional cancer therapies because they do not need to penetrate the innermost layer of a tumor to take effect. Lastly, while drug resistance caused by the instability and mutability of cancer cells is a significant problem with conventional therapies that target tumor cells, cells targeted by VTAs do not mutate to become drug resistant.

About Peregrine Pharmaceuticals

Peregrine Pharmaceuticals is a biopharmaceutical company focused on the development, commercialization and licensing of unique technologies for the treatment of cancer, primarily based on three collateral targeting technologies. Peregrine's Tumor Necrosis Therapy (TNT), Vasopermeation Enhancement Agents (VEA), and Vascular Targeting Agents (VTA) technologies target cell structures and cell types that are common among solid tumor cancers, giving them broad applicability across various tumor types. The company has received approval from the FDA to start a Cotara™ Phase III clinical trial for brain cancer. Cotara is also being studied in a Phase I trial for colorectal, pancreas, soft tissue sarcoma and biliary cancers at Stanford University. The company is focused on licensing collaborations for all of its technologies under development. The company's Oncolym® technology to treat non-Hodgkin's B-cell lymphoma is in Phase I/II of development and is available for licensing. The company also operates a cGMP contract manufacturing facility for monoclonal antibodies and recombinant proteins through its wholly owned subsidiary Avid Bioservices, Inc. (www.avidbio.com). Copies of Peregrine press releases, SEC filings, current price quotes and other valuable information for investors may be found on the website www.peregrineinc.com .

Safe Harbor Statement: This release may contain certain forward-looking statements that are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Actual events or results may differ from the company's expectations as a result of risk factors discussed in Peregrine's reports on file with the U.S. Securities and Exchange Commission, including, but not limited to, the company's report on Form 10-K for the year ended April 30, 2002 and on Form 10-Q for the quarter ended January 31, 2003.

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